EXHIBIT 15

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

ASETEK DANMARK A/S Plaintiff and Counterdefendant, v. COOLIT SYSTEMS, INC., Defendant and Counterclaimant. COOLIT SYSTEMS USA INC., COOLIT SYSTEMS ASIA PACIFIC LIMITED, COOLIT SYSTEMS (SHENZHEN) CO., LTD., Defendants, CORSAIR GAMING, INC. and CORSAIR MEMORY, INC. Defendants.	CASE NO. 3:19-cv-00410-EMC

INITIAL EXPERT REPORT OF DR. CARL-FREDRIK STEIN REGARDING PUMP IMPELLER DESIGNS AND PERFORMANCES

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I. INTRODUCTION

1. My name is Carl-Fredrik Stein. I am the Deputy Managing Director of FS Dynamics Sweden AB ("FS Dynamics"). FS Dynamics has been retained by Finnegan, Henderson, Farabow, Garrett & Dunner, LLP on behalf of Asetek Danmark A/S ("Asetek") to investigate and opine on certain pump design issues in the case *Asetek Danmark A/S v. CoolIT Systems Inc., et al.* that is before the U.S. District Court for the Northern District of California.

2. I have been asked by counsel for Asetek to analyze a product of CoolIT Systems Inc. ("CoolIT") and opine on the design, performance, and efficiency of the pump impeller used in CoolIT's product (hereinafter "CoolIT impeller") as compared to certain other types of pump impellers. Specifically, I have been asked to consider the behavior and efficiency of the CoolIT impeller vis-à-vis the behavior and efficiency of a standard curved-blade impeller and a straight-blade (radial) impeller. I understand that my opinion concerns Asetek's U.S. Patent No. 8,240,362, which includes claims that recite "an impeller having curved blades."

3. This Report is based on information currently available to me. I understand that I may have an opportunity to supplement my analysis in this Report in response to any reports prepared on behalf of CoolIT. I also understand that I may have an opportunity to amend or supplement my opinions based on further discovery and information provided in this case. Any citation to evidence in this Report is intended to be exemplary, and not intended to be exhaustive. I understand that I may have the opportunity to create additional exhibits, summaries, tutorials, demonstrations, charts, drawings, tables, and/or animations that may be appropriate to support or demonstrate my opinions at trial.

4. In reaching the opinions set forth herein, I have relied on my experience, education, and expertise. My citations to various pictures and drawings are illustrative only, and in many cases alternative documents, CAD drawings, or pictures may further support the described technical features and simulation results.

5. I am being compensated at the rate of $170 per hour for my work on this case plus charges for use of license and cluster resources to run the engineering software. My compensation does not depend on the outcome of this litigation.

II. SUMMARY OF OPINIONS

6. In my opinion, the CoolIT impeller functions and behaves like a typical backward-curved pump impeller. The pumping efficiency of the CoolIT impeller is also very similar to that of a typical backward-curved impeller.

7. It is my understanding that CoolIT has attempted to characterize their pump impeller as a straight-blade impeller. I do not agree that the CoolIT impeller can be referred to as straight-blade impeller because generally radial impellers — where the fluid flow leaves the impeller in radial direction, perpendicular to the pump shaft — are known in the field of pump technology as straight-blade or straight-vane impellers. The CoolIT impeller is not a radial impeller and thus cannot be properly characterized as a straight-blade impeller or straight impeller.

III. QUALIFICATION AND EXPERIENCE

8. FS Dynamics is a leading provider of computer-aided engineering (CAE) services in Europe. FS Dynamics has vast experience in the use of computer software to simulate, validate and/or optimize the performance of products for a wide range of industries and technologies, including pump technology. FS Dynamic's simulation and calculation services are primarily focused on the industrial application of CFD (Computational Fluid Dynamics) and FEA (Finite Element Analysis).

9. Since 2012, FS Dynamics has performed at least 90 projects for 48 different clients involving pump technology. This list of clients includes well-known pump manufactures like Grundfos, many smaller companies (e.g., healthcare companies) that manufacture pumps, as well as

automotive companies that utilize liquid pumps in their technology. The pump-related projects at FS Dynamics cover a wide variety of pump types, ranging from tiny pumps (for example, those used in computer liquid cooling) to very large pumps used in nuclear power plants, and from commonly used centrifugal pumps to piston pumps for blood circulation in the human body. These pump-related projects are generally directed to efficiency issues, but in some case the projects also cover structural and installation issues. FS Dynamics, including myself, has vast experience with pump simulation software such as Star-CCM+ (sold by Siemens Industrial Software) and Ansys Fluent.

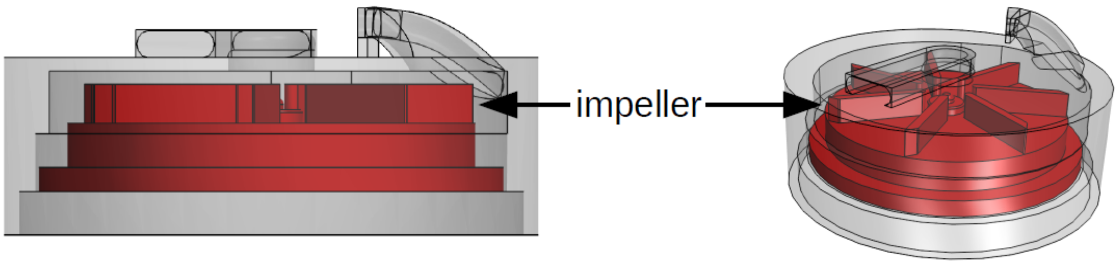
10. I have personally supervised the pump simulation work described in this Report. The simulation was run by my colleague Dr. Nelson Marques, Director of Operations at FS Dynamics Portugal, under my guidance and direction.

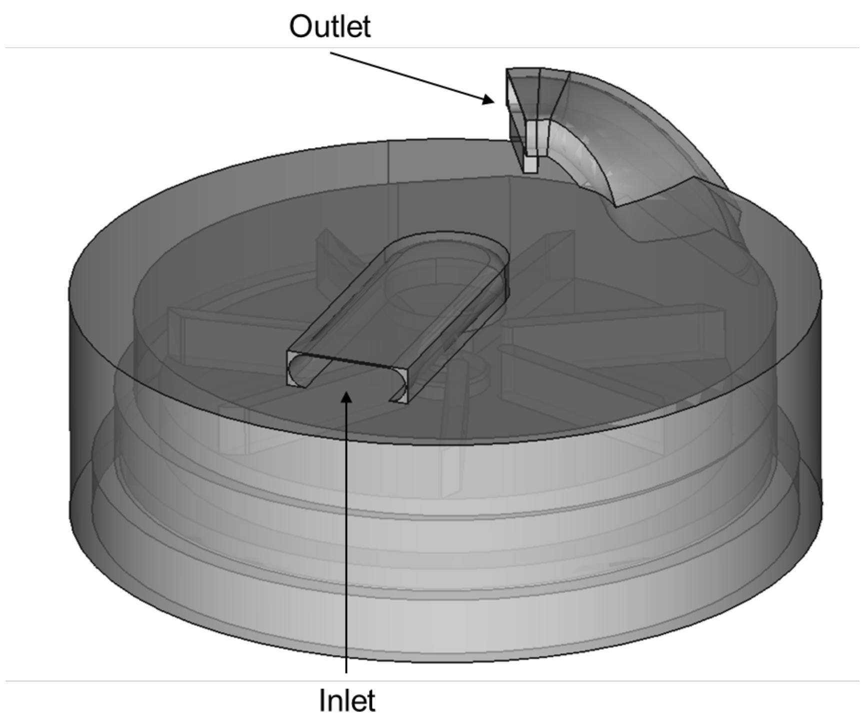
11. I received a Ph.D. in Applied Mathematics from the Chalmers University of Technology in Gothenburg, Sweden, in 2000. My Ph.D. thesis focused on fluid and thermal dynamics. I also received a M.Sc. degree in engineering physics from the Chalmers University of Technology in 1995. I have extensive experience as a CFD engineer. Following my graduate studies, I worked as CFD and CAE consultant in two engineering and technology companies in Sweden from 2000-2004 before co-founding my own company, FS Dynamics, in 2004. I am currently the Deputy Managing Director for FS Dynamics Sweden AB and the Managing Director for FS Dynamics Norway AS, FSD Blue Cape Lda, and FS Dynamics UK Ltd. My CV is attached as Exhibit A.

IV. OVERVIEW OF THE PUMP SIMULATION WORK

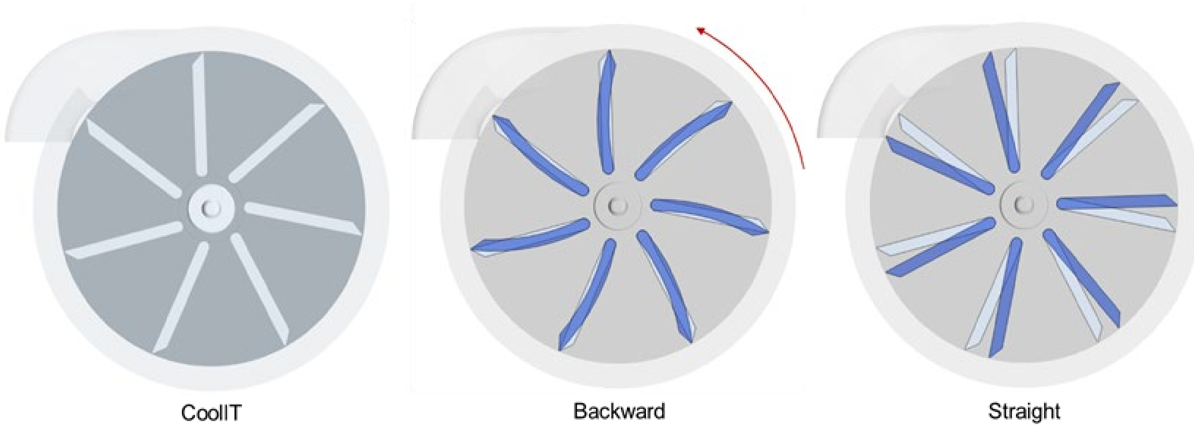
12. To simulate the CoolIT impeller, we first created a CAD representation of the pump. To do that, an off-the-shelf Corsair H100i RGB PRO XT cooler (which I understand is a CoolIT-made product) was purchased from a local retailer. The product was disassembled, and each component was the measured with the aid of a caliper. A 3D CAD representation of the

pump volute, inlet/outlet, and the impeller was then created using ANSYS's SpaceClaim tool. The 3D CAD representation of the CoolIT pump is shown below.

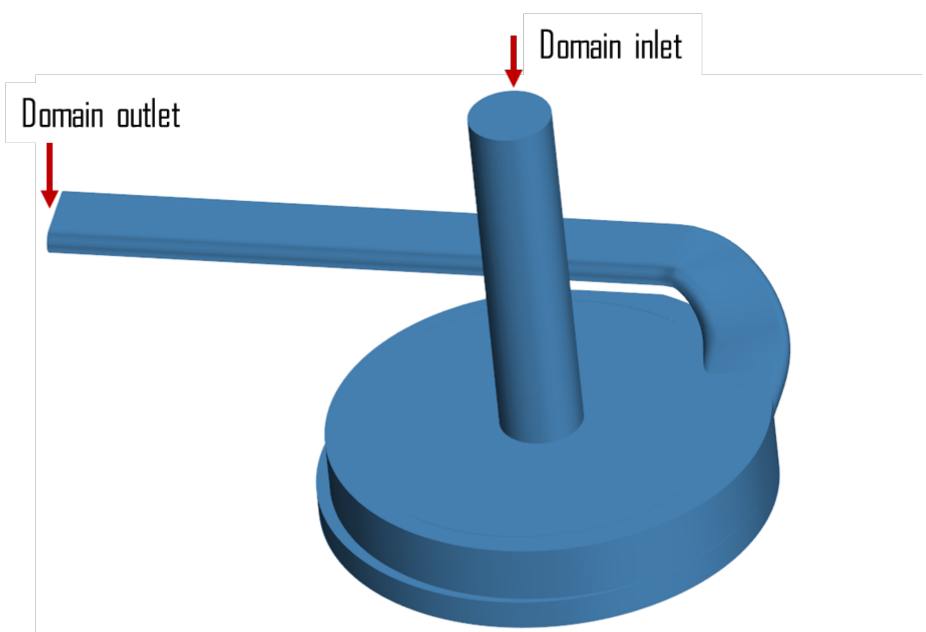




13. In addition to the CoolIT impeller, a set of backward-curved impeller blades and a set of straight (radial) blades were drawn as well. The blades were set to rotate at 2800 rpm (in the direction shown by the curved red arrow) in the simulation. As shown below, the CoolIT impeller blades and the backward-curved blades substantially overlap, whereas the CoolIT impeller blades and the straight blades do not overlap.

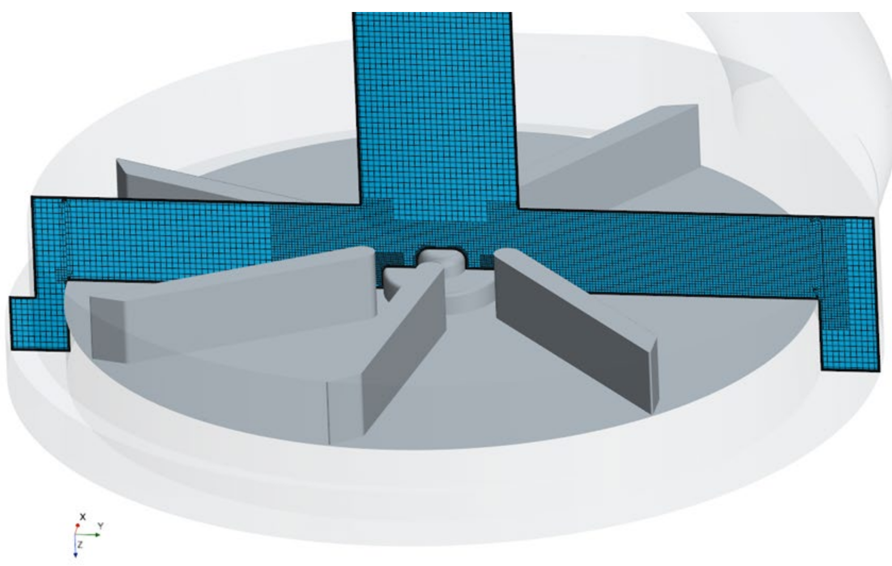


14. The CFD simulation was then carried out on the space domain occupied by the water inside the pump, delimited by all of the pump's surfaces, moving or otherwise. The computer representation of this space domain, which is generally referred to as the simulation or computational domain, is shown below. The water volumetric flow rate at the inlet was designed to be variable, whereas the pressure at the outlet was designed to be fixed.



15. The CFD analyses were performed with the leading commercial tool available today: Star-CCM+ (version 2021.1). The blade motion for each impeller was simulated using a MRF (Multiple Reference Frame) methodology. The flow was modelled as laminar or turbulent, depending on the entry Reynolds number. The fluid properties were assigned to be constant and locked at values corresponding to water at 30 $°C$. No thermal effects were considered, i.e., the simulated flows were isothermal. The simulations were run at flow rates of 5, 10, 20, 40, 80, 160, 240, 320 and 400 l/hr.

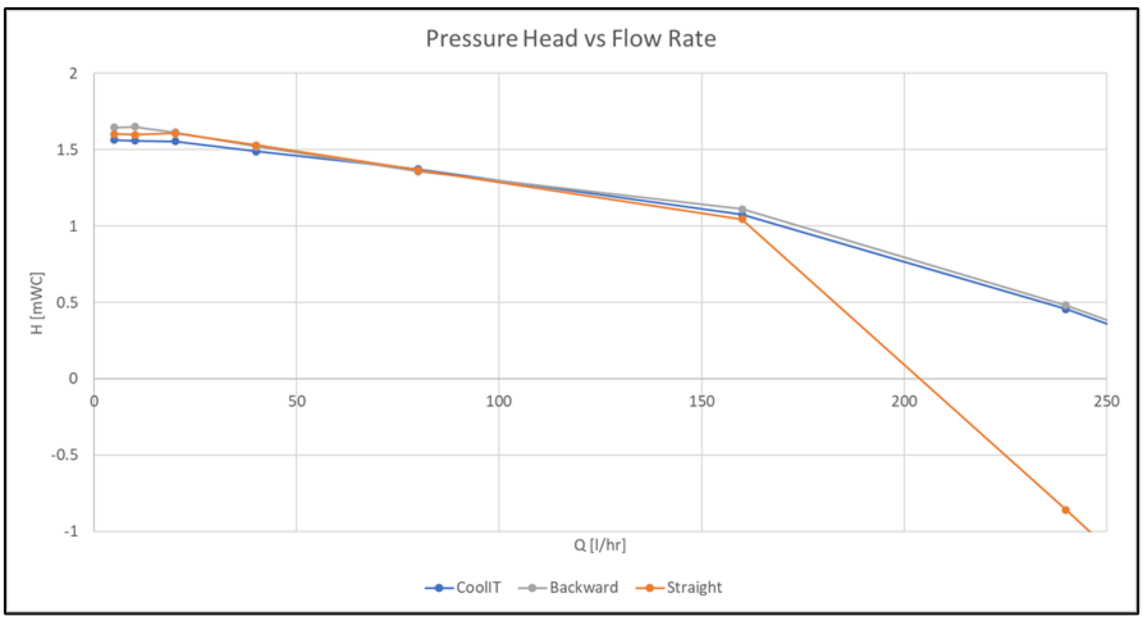
16. The computational domain for each impeller was meshed in STAR-CCM+ using a hexcore mesh, which provides a high-quality mesh and an efficient use of computational resources. The total mesh ranged from 7.5 million to 8.5 million cells, depending on the blade type. The image below shows a cross-sectional view of the mesh for the CoolIT impeller. The maximum side length (e.g., cell size) of the mesh was about 0.25 mm, with smaller cell sizes near the solid surfaces.



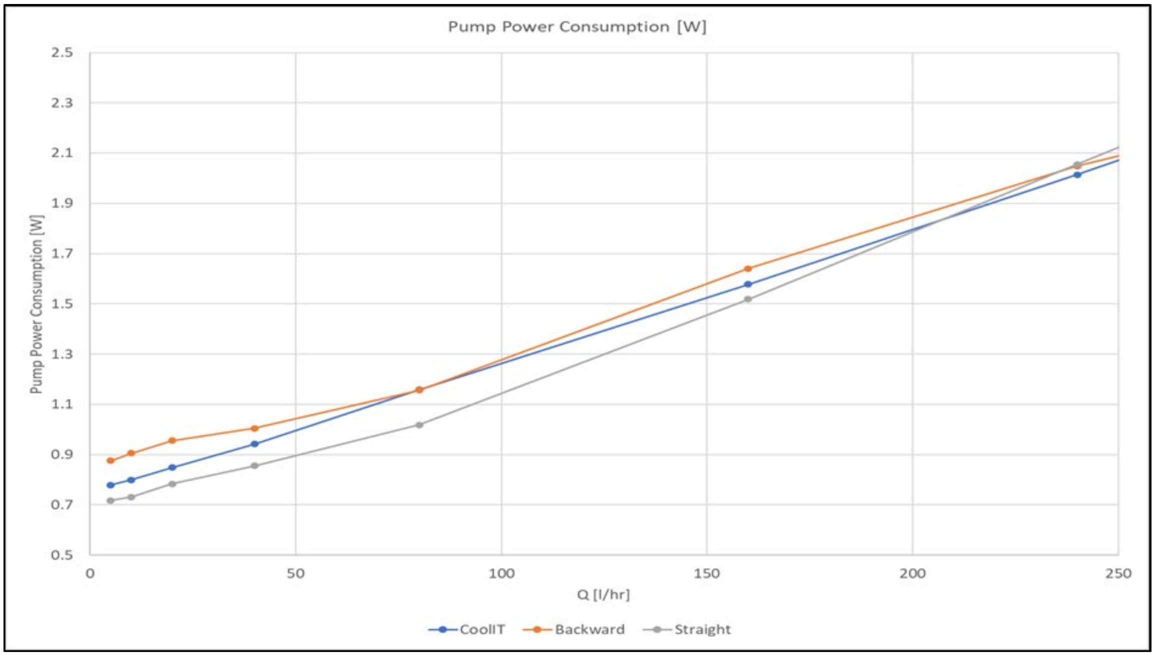
V. SIMULATION RESULTS

17. To analyze and compare the performance of the CoolIT impeller vis-à-vis the backward-curved impeller and the straight-blade impeller, the pump curves (i.e., the pressure-flow (P-Q) metrics), power consumption, and the hydraulic efficiencies of the impellers were

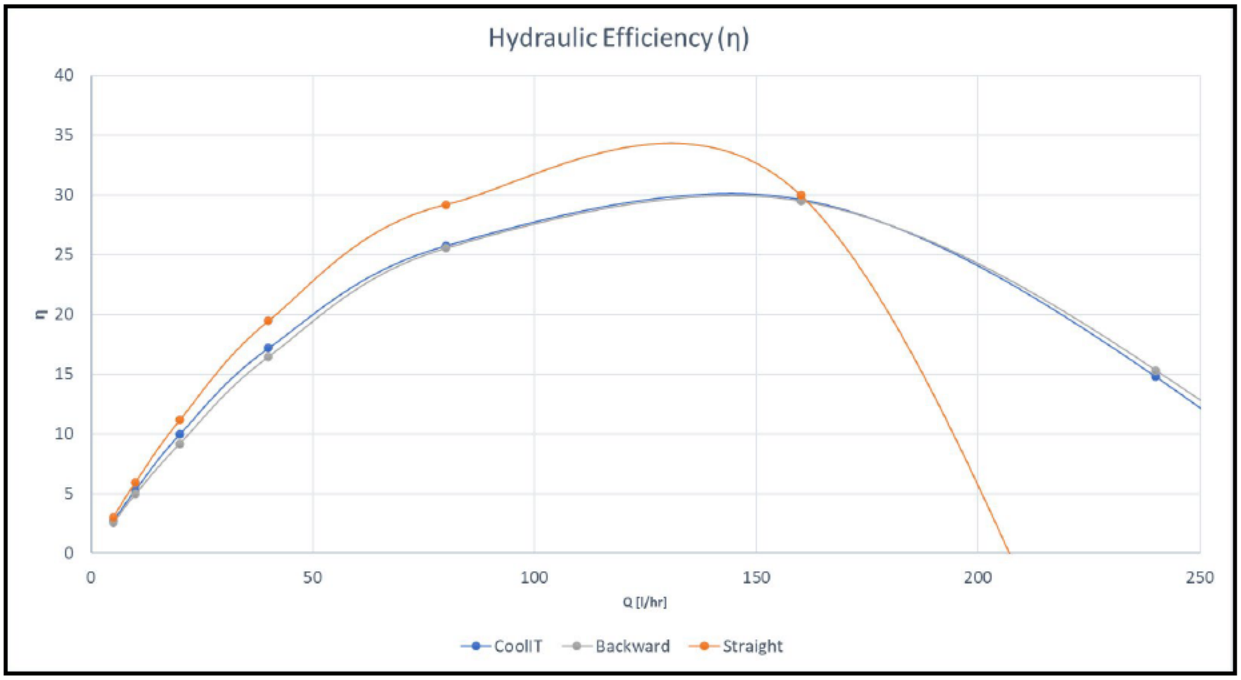
considered according to standard engineering practice. The pump curves of the impellers, which indicate the correlation between liquid flow rate and pressure head gain, show that the CoolIT impeller behaves like a backward-curved impeller. Specifically, the P-Q curve of the CoolIT impeller is very similar to that of a backward-curved impeller. While at higher flow rates, the pressure head of the straight-blade impeller begins to drop, the pressure head of the backward-curved impeller and the CoolIT impeller remains similar and drops very little as compared to the straight-blade impeller. The CoolIT impeller thus performs and behaves more like a backward-curved impeller than a straight-blade impeller. The differences in pressure head between the backward-curved impeller and the CoolIT impeller are not significant. In fact, in the range of flow rates relevant to these types of devices, the pressure head of the CoolIT impeller is substantially the same as that of the backward-curved impeller.



18. We also considered the power consumption of each pump impeller at various flow rates. As shown below, the CoolIT impeller generally consumes less power than a backward-curved impeller at any given flow rate, but the difference is small. In comparison, the difference in power consumption between the CoolIT impeller and the straight impeller is larger.



19. When we combine the data in the pressure head vs. flow and the power consumption vs. flow curves into plots of hydraulic efficiencies of the three impellers, they clearly show that the CoolIT impeller operates in the same way as a backward-curved impeller, whereas a typical straight-blade impeller operates differently. To be clear, hydraulic efficiency is the percentage of mechanical energy that is transferred to the liquid by the spinning blades and that remains undissipated at the outlet of the pump. As shown in the graph below, the hydraulic efficiency of the straight impeller drops rapidly after reaching peak efficiency, whereas the drops for the CoolIT impeller and the backward-curved impeller are more gradual. Importantly, the hydraulic efficiency of the CoolIT impeller is substantially the same as that of the backward-curved impeller, particularly at the point where each of these impellers reach their peak efficiencies.



VI. NOTICE AND SUPPLEMENTATION

20. I understand that discovery is ongoing in this case. Therefore, I reserve the right to supplement my opinions or amend this Report in the event additional evidence or information pertinent to my opinions becomes available, and I plan to do so. I may also provide rebuttal to any opinions of other fact and expert witnesses, should I be requested to do so.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed this 16th day of September 2021 in Göteborg, Sweden.

Carl Fredrik Stein

Carl-Fredrik Stein, Ph.D.

EXHIBIT A

FS DYNAMICS

CURRICULUM VITAE

Carl Fredrik Stein

Deputy Managing Director, born 09-05-1972

PRESENTATION

Background as a Senior CFD Engineer. Experienced in Project Management, Sa es, Sa es Management, Finance Management and Company Management. Co-founder and co-owner of FS Dynamics group. Deputy Managing Director for FS Dynamics Sweden AB and Managing Director for FS Dynamics Norway AS, FSD B ue Cape Lda and FS Dynamics UK Ltd.

APPLICATIONS

es-Ice
Star-CD
Ansa
CFX
F uent
Star-CCM+

EDUCATION

Basic education

1995 - 2000	**Chalmers University of Technology, Dept. of Mathematics,** Ph. D. in App ied Mathematics Thesis: Some Issues in F uid and Therma Dynamics
1992 - 1995	**Chalmers University of Technology,** M. Sc. Enigineering Physics Thesis: A DNS Study of Intrusion Fronts Company: ETH City: Zurich

Courses

2018 - Now	**Negotiation techniques** Jon Ek öf 1 day Description of some termino ogy and various tips and tricks for efficient negotiations
2012 - Now	**Project Manager Training**

Wene s
4 days
Introduction to basic project management theory, inc uding group dynamics and risk management

2010 - 2011 **Management Training**
Framfot
6 days
Introduction to abour aw, group dynamics, management theories, motivators and other aspects of management

2000 - **Flotherm course**
F omerics
1 week
Introduction to e ectronics coo ing and introduction to the F otherm software

EMPLOYMENT

2004 - Now **FS Dynamics AB, Gothenburg**
Management

2001 - 2004 **Epsilon HighTech Engineering, Gothenburg**
CFD Consu tant

2000 - 2001 **Frontec Research & Technology , Gothenburg**
CAE Consu tant

1995 - 2000 **Chalmers University of Techn., Gothenburg**
Ph.D. Student

ARTICLES

2002 *An analytical asymptotic solution to a conjugate heat transfer problem, Intl J Heat Mass Transfer, 45(12), 2485-2500*

2001 *On the regularity and uniqueness of conically self-similar free-vortex solutions to the Navier-Stokes equations, ZAMP, May*

2001 *On the relation between Long's vortex and general self-similar vortex cores, Phys Fluids, 13(7)*

2001 *Quantities which define conically self-similar free-vortex solutions to the Navier-Stokes equation uniquely, J Fluid Mech, 438, 159-181*

2000 *On the existence of conically self-similar free-vortex solutions to the Navier-Stokes equations, IMA J Appl Math, 64(3)*

OTHER MERITS

CAD:

Languages: Swedish, Mother tongue
Eng ish, F uent

German, Good written and spoken

French, Basic written and spoken

Russian, Basic written and spoken